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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/730,786	12/07/2000	Satoshi Mikami	N00230US	8900

21254 7590 03/11/2004

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VIENNA, VA 22182-3817

EXAMINER

CHAN, ALEX H

ART UNIT	PAPER NUMBER
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2633

DATE MAILED: 03/11/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/730,786

Applicant(s)

MIKAMI, SATOSHI

Examiner

Alex H Chan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 September 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 December 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. The amendment filed on December 30th, 2003 is herein acknowledged.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. **Claims 1-26** are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent No. 6,172,803 B1 to Masuda et al (hereinafter Masuda) in view of U.S. Patent No. 6,452,721 B2 to Deguchi et al (hereinafter Deguchi).

Regarding claims 1, 4, 7, 10, 13, 14, 17, 20, 23 and 26, Masuda discloses an optical communication system (Fig. 29) for amplifying an optical signal propagating through an optical transmission line (e.g. upward transmission line to B₁ or downward transmission line via B₂) by using an optical amplifier (A₂) in an optical repeater (A) and emitting an amplified optical signal to an optical transmission line (a₁, B₁ and B₂) mounted at a back stage comprising: a transmission line compensating device (e.g. Raman Amplifier, A₁) for producing a Raman amplification effect within said optical transmission line based on a control signal superimposed on said optical signal (via a₃). Though Masuda discloses an excitation light, Masuda does not disclose a transmission line compensating device to generate control light. Deguchi discloses a

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transmission line compensating device (Fig. 1 or Fig. 9) to generate control light (e.g. via 16 (common circuits since same circuits are used for forward and backward pumping, Col. 8, lines 41-49)) for producing a Raman amplification effect within said optical transmission line outside said optical repeater (e.g. gain by Raman amplification is obtained near the input (i.e. outside) of optical repeater 18(#2) of Fig. 2 and Col. 5, lines 27-30). Accordingly, one of the ordinary skilled in the art would have been motivated to employ a control light for controlling the power of the pump light so that a proper gain according to the input power of the optical signal is obtained, which causes Raman amplification in an optical fiber transmission line (Col. 4, line 57-Col. 5, line 5). Therefore, it would have been obvious to one of artisan from the same endeavor at the time the invention was made to modify the Raman amplifier of Masuda by replacing the excitation light with a control light generated by control circuit because this controls the power of the pump light and causes Raman amplification in an optical fiber transmission line.

Also, producing the Raman amplification inside or outside of said optical repeater is merely a design choice which one of ordinary skilled in the art recognizes. Such modification would not produce any undue burden to one artisan nor is it novel in the industry since producing such amplification outside said repeater depends on design specification, requirement and signal characteristics. This support rational is based on a recognition that the claimed differences exist not as a result of an attempt by applicant to solve a problem but merely amounts to selection of expedient known to the artisan of ordinary as design choice.

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Regarding claims 2-3, 8-9, 15-16 and 21-22, Masuda in view of Deguchi discloses a said transmission line compensating device is so configured as to send control light to an optical transmission line mounted at a front stage (e.g. via excitation light from a_2 of Fig. 30, Masuda, or backward pumping, Col. 8, lines 41-47 and Col. 9, lines 17-20, Deguchi) or at a back stage (e.g. via excitation light from 1_e of Fig. 30, Masuda, or forward pumping, Col. 6, lines 27-32, Deguchi).

Regarding claims 5, 11, 18 and 24, Masuda in view of Deguchi does not disclose that the transmission line compensating device is separately and individually outside optical repeater. However, due to lack of criticality, to shift location of prior art parts and its function does not make the claimed invention patentable over that prior art. (In re Japikse, 86 USPQ 70). Also, to make prior art parts separable does not make the claimed invention patentable over that prior art (Nerwin v. Erlichman, 168 USPQ 177).

Regarding claims 6, 12, 19 and 25, Masuda in view of Deguchi discloses said transmission line compensating device includes two or more control light sources (16-4 and 16-6 of Fig. 16, Masuda or 42 and 38 of Fig. 12, Deguchi) to generate control light having a different wavelength (e.g. 1.48 and 1.55 μm , Masuda or Col. 12, lines 1-8, Deguchi) and output and an optical multiplexer (e.g. combination of 16-5 and 16-7 of Fig. 16, Masuda or combination of 44

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and 40 of Fig. 12, Deguchi) to multiplexer said control light fed from said two or more control light sources.

Response to Arguments

4. Applicant's arguments, see pages 12-22, filed on December 30th, 2003, with respect to the rejection(s) of claim(s) 1-26 under 35 U.S.C. 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Masuda et al.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kawakami et al (Fig. 1-2) and Stentz et al (Fig. 2) are cited to demonstrate forward and backward pumping designed to have Raman gain.

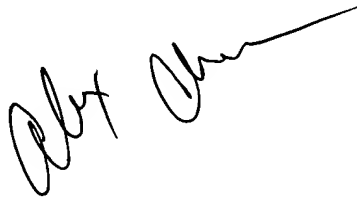
6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alex H Chan whose telephone number is (703) 305-0340. The examiner can normally be reached on Monday to Friday (8am to 6pm EST).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (703) 305-4729. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

7. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Alex Chan
Patent Examiner
February 24th, 2004

A handwritten signature in black ink, appearing to read 'Alex Chan', is written over the typed name and date.